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A Revision of the Systematic Position of *Dieuches tsutsuii* HIDAKA and *Paradieuches* DISTANT (Heteroptera, Lygaeidae, Rhyparochrominae)

By

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友国　雅章*：ツツイナガカメムシおよびキモンナガカメムシ属（カメムシ目，ナガカメムシ科，ヒョウタンナガカメムシ亜科）の分類学的位置の再検討

It was first pointed out by EYLES (1973, p.38) that *Dieuches tsutsuii* HIDAKA, 1963, described from Japan, does not belong to the nominal genus. However, true generic position of the species has never been revised so far. Since adequate material of the rare lygaeid was recently collected in Yamaguchi Prefecture, Western Honshu, Japan, under the project of "Natural History Researches of the Western Chugoku and Northern Kyushu Regions" conducted by the National Science Museum, Tokyo, in 1997, detailed taxonomic examination of the species has become possible. Besides this, tribal misplacement for the genus *Paradieuches* DISTANT, 1883, which resembles in external appearance the species under consideration, was also found in the course of this study. In the present paper, I am going to offer solutions to these problems by describing a new genus to accommodate HIDAKA's species and correcting the tribal positioning of DISTANT's genus.

The specimens used in this study will be preserved in the National Science Museum, Tokyo, with a few exceptions whose depository are given individually in the following text.

Hidakacoris gen. nov.

Description. Medium-sized, elongate and nearly parallel-sided, dark reddish brown with whitish markings on pronotum and hemelytra. Head triangular, weakly declivent, slightly shorter than width across eyes, pubescent, shining and finely shagreened, with clypeus somewhat protruded anteriorly; head beneath strongly depressed on posterior half. Antennae as long as hemelytra, moderately thick, with 2nd segments longest and 1st shortest. Rostrum long, well reaching metasternum; 1st segment reaching apical margin of prosternum; 2nd the longest.

Pronotum trapezoidal, opaque, sparsely covered with decumbent pubescence, coarsely punctate except for disc of its anterior lobe, transversely impressed just behind middle, with not clearly defined depressed collar; lateral carinae well laminated, impunctate, concavely sinuate at middle and widest there; humeral angles thick, roundly projected postero-laterally, thus hind margin of pronotum concave on scutellum. Scutellum opaque, punctate, a little longer than wide, with a large obscure Y-shaped carina. Hemelytra opaque, reaching just before end of abdomen, weakly constricted near base, thence

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gradually tapering apicad, glabrous except for minute pubescence on costal margins and in punctures; clavus parallel-sided, with three rows of punctures, the innermost one of which develops only on posterior half of clavus; corium moderately long, nearly half length of body, with three longitudinal rows of punctures, and with apical margin very faintly convex. Thoracic pleura opaque, punctate, the punctures becoming larger and deeper posteriad; ostiolar peritreme crescent, with evaporatorium occupying about half of metapleura. Legs shining, pubescent, moderate in length; fore femora much thicker than mid and hind ones, ventrally with a large spine at apical third and with two rows of minute spines in apical half; mid and hind tibiae ventrally with several outstanding bristles in each apical half; 1st tarsal segment longer than 2nd and 3rd combined in all legs.

Abdomen beneath (Fig. 1A) shiny and finely shagreened, densely with decumbent sericeous pubescence; connexivum broad, distinctly upturned; all abdominal spiracles ventral on each sternum; all trichobothria on 5th sternum located anterior to spiracle of the sternum, the posterior pair arranged one above the other well apart from anterior one; numerous pores present on each sternum exterior to trichobothrial furrow.

Pygophore with distal margin distinctly ridged (Fig. 1B), somewhat truncated in ventral view; dorsal opening wide, with a characteristic projection on intero-lateral margin (Fig. 1C). Parameres (Fig. 1D) simple, with a sharply prominent inner projection, without well defined outer projection. Aedeagus (Fig. 1E) rather simple, without spine-like or sack-like processes on conjunctiva; ejaculatory reservoir well sclerotized, with a pair of stout S-shaped wings; vesica sharply bent ventrad at base, without any basal process but with three heavily sclerotized spines, central one long and a

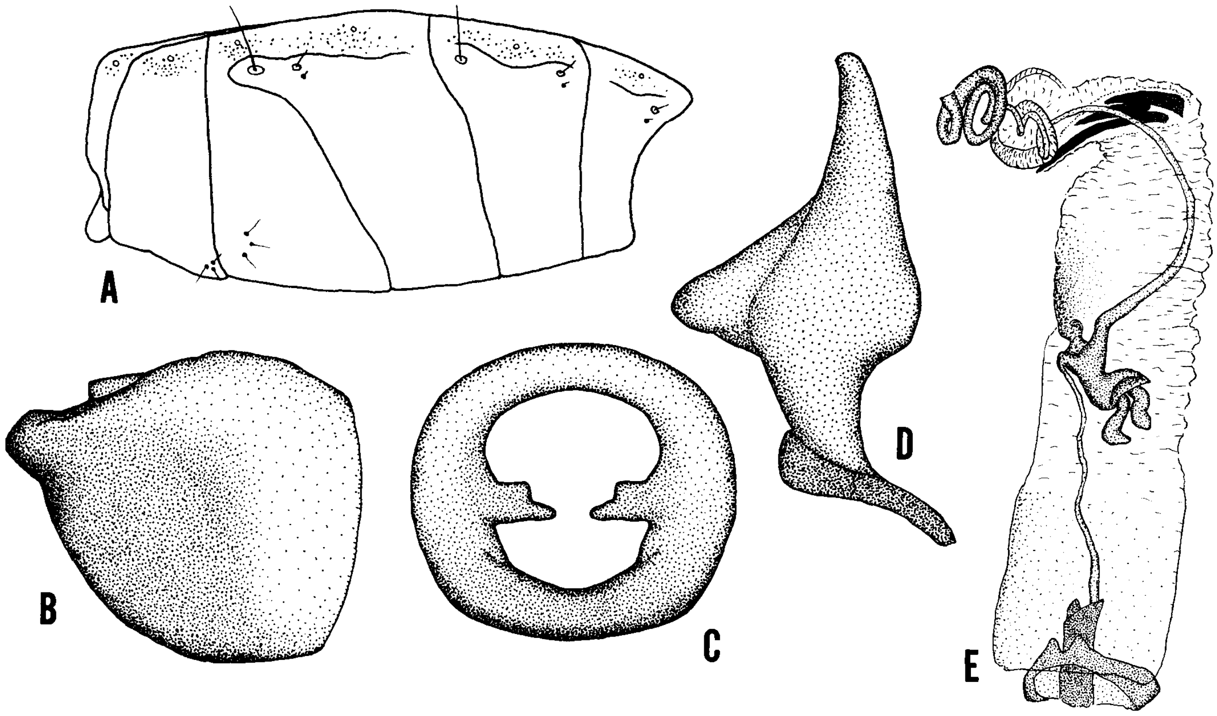

Fig. 1. *Hidakacoris tsutsuii* (HIDAKA). A, abdomen without genital segments, lateral view; B, pygophore, lateral view; C, dorsal opening of pygophore; D, left paramere; E, aedeagus.

pair of laterals much shorter, being sheathed by a long membranous sack protruded laterally well before distal end; helicoid process weakly sclerotized; gonoporal process short, well pigmented, with about four turns.

Type species. *Dieuches tsutsuii* HIDAKA, 1963. By monotypy.

Discussion. From the current tribal concept of the rhyparochromine lygaeid presented by SCHUH and SLATER (1995), the genus *Hidakacoris* can unquestionably be recognized as a member of the tribe Drymini. Particularly, the location of the abdominal spiracles and trichobothria shows a condition typical to the tribe as mentioned above. So far as known to me, the genus bears the closest resemblance in external habitus to the genus *Paradieuches*. However, the aedeagal structures of the two genera are clearly different from each other. It is quite similar to that of the *Drymus* group (ASHLOCK, 1957) in *Paradieuches* as discussed later in this paper. On the contrary, that of *Hidakacoris* is very unique particularly in the feature of the vesica which lacks any basal process but bears three sclerotized distal spines sheathed by a long membranous sack. So far as I have examined, such structure has never been found among any drymine lygaeids from Japan and her neighbouring areas. Therefore, the systematic relationship of the genus still remains unsolved. This genus can also be separable from *Paradieuches* and its relatives by a combination of such characters as longer and impunctate head, impunctate disc of the anterior pronotal lobe, opaque dorsum of the pronotum, scutellum and hemelytra, and dark reddish coloration of the body.

Included species. *Hidakacoris tsutsuii* (HIDAKA), comb. nov.

One female specimen in our collection collected from Sulawesi, Indonesia, may belong to a second species of the genus. However, I prefer to postpone the final identity of the species until the male materials are available.

Etymology. Named after Dr. Terunobu HIDAKA who is the author of the type species of the genus. Gender masculine.

***Hidakacoris tsutsuii* (HIDAKA), comb. nov.** (Figs. 1 & 2)

[Japanese name: Tsutsui-nagakamemushi]

Dieuches tsutsuii HIDAKA, 1963, Kontyû, 31: 172.

Supplement to the original description. Body length ♂5.9-6.2, ♀ 6.2-7.3; body width at elytral base ♂1.7-1.8, ♀ 1.8-2.1; pronotal length ♂1.4-1.5, ♀ 1.5-1.7; pronotal width ♂1.5-1.7, ♀ 1.7-2.0 (mm). Male apparently smaller and narrower than female but the coloration almost the same in male as in female. Costal margin of hemelytra narrowly pale, slightly reflexed upward; corium usually with small obscure pale markings on disc; membrane also with a small pale spot at outer basal angle next to tip of corium. Proportion of rostral segments 1 to 4 as 15: 19: 12: 9. Male genital structure as shown in Fig. 1.

Specimens examined. Holotype♀ of *Dieuches tsutsuii*, Mt. Gomadan, Wakayama Pref., 3-VIII-1957, Y. TSUTSUI leg. (Ent. Lab. Kyushu Univ.). Honshu—4♂2♀, Chômon-kyo, Yamaguchi Pref., 27-IX-1997, M. TOMOKUNI leg. Shikoku—1♀, Komenono, Matsuyama, Ehime Pref., 13-XI-1976, T. MATSUDA leg. (Ent. Lab. Ehime Univ.); 1♀, Mt. Tôgu-san, Tokushima Pref., 3-XI-1975, M. YOSHIDA leg. Kyushu—1♂1♀(Fig. 2), Mt. Unzen, Nagasaki Pref., 4-VI-1979, M. YOSHIDA leg. Of these, 1♂ from Chômon-kyo and 1♂ from Mt. Unzen were dissected for observation of the genitalia.

Distribution. Japan—Honshu, Shikoku, Kyushu.

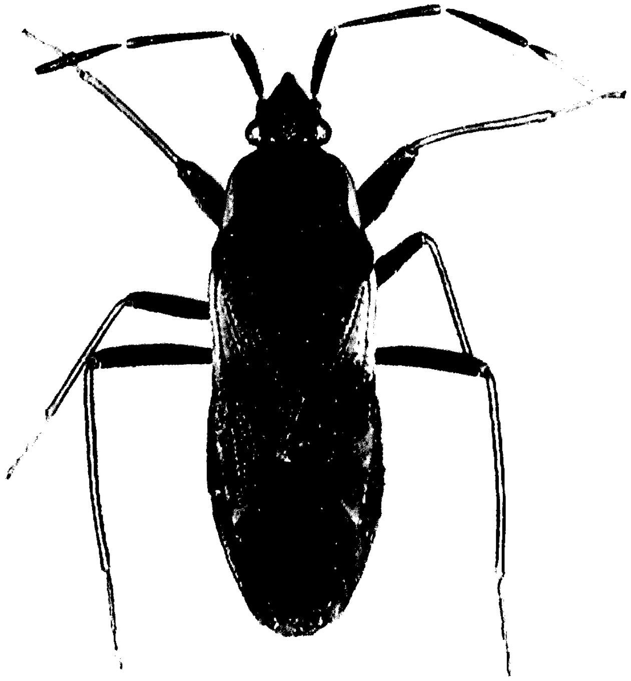

Fig. 2. *Hidakacoris tsutsuii* (HIDAKA) ♀ from Mt. Unzen, Nagasaki Pref., Japan.

Biology. Though the specimens from Chômon-kyo, Mt. Tôgu-san and Mt. Unzen were found in leaf litter of broadleaf forests, nothing has actually been known on its biology.

Genus *Paradieuches* DISTANT (Fig. 3)

Paradieuches DISTANT, 1883, Trans. ent. Soc. Lond., 1883: 438.

Type species. *Paradieuches lewisi* DISTANT, 1883. By monotypy

Diagnosis. Body elongate, nearly parallel-sided, black with brownish and yellowish markings. Head pentagonal, shorter than wide, sparsely pubescent, with vertex distinctly punctate. Antennae rather stout, slightly longer than hemelytra. Rostrum exceeding mid-coxae.

Pronotum as long as wide, constricted near middle; lateral carinae well laminated. Scutellum punctate, clearly longer than wide, with a large obscure Y-shaped carina. Hemelytra convergent at basal fifth, extending to tip of abdomen; clavus and corium each with three regular rows of punctures; apical margin of corium nearly straight; costal margin narrowly reflexed upward. Thoracic pleura evenly punctate. Legs short; fore femora swollen, ventrally with a large stout spine at apical third, and with two rows of short spines antero- and postero-ventrally.

Abdomen beneath finely wrinkled; all abdominal spiracles located ventral on each sternum; all trichobothria on 5th sternum anterior to spiracle of the sternum, the posterior pair arranged one above the other well apart from anterior one; numerous pores present on each sternum exterior to trichobothrial furrow.

Pygophore (Fig. 3A) with distal margin rounded in ventral aspect, wedge-shaped in profile. Parameres (Fig. 3B) short; inner projection stout with rounded tip; blade also stout. Aedeagus (Fig. 3C) simple, without any conjunctival processes; ejaculatory reservoir rather slender, with thin

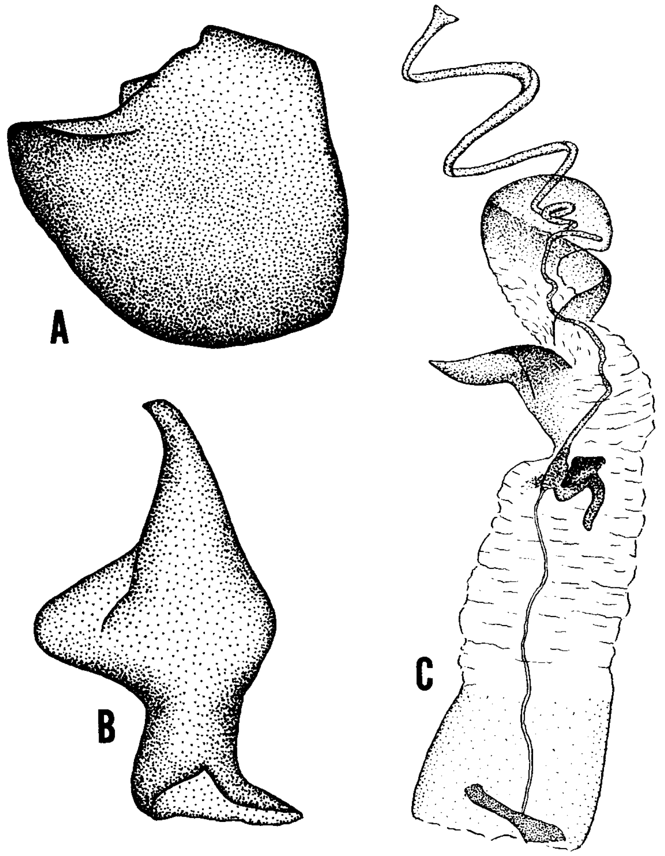

Fig. 3. *Paradieuches lewisi* DISTANT. A, pygophore, lateral view; B, left paramere; C, aedeagus.

wings weakly S-curved in profile; vesica ventrally with a long pointed conspicuous lobe well apart from its base; helicoid process long, clearly sclerotized; gonoporal process short, about four turned.

Specimens dissected. *Paradieuches lewisi*: 1 ♂(Fig. 3), Tsuta, Towadako-machi, Aomori Pref., Japan, 4-V-1996, T. ICHITA leg. *P. dissimilis* (DISTANT): 1 ♂, Mt. Higure-yama, Nanae-cho, Hokkaido, Japan, 28-VI-1986, M. TOMOKUNI leg.

For comparison to these species I also dissected the following materials. Of *Drymus* (*Sylvadrymus*) *marginatus* DISTANT, 1 ♂, Anba~Ootaki, Kiso-gun, Nagano Pref., Japan, 7-X-1976, M. TOMOKUNI leg.: of *Eremocoris angusticollis* JAKOVLEV, 1 ♂, Mt. Shibakoya, Tokushima Pref., 2-X-1977, M. YOSHIDA leg.; 1 ♂, Mt. Tôgu-san, Tokushima Pref., 3-X-1975, M. YOSHIDA leg.: of *E. hirashimai* HIDAKA, 1 ♂, Muroto, Kochi Pref., 25-III-1992, I. YAMASHITA leg.; 1 ♂, Omoto-dake, Ishigaki Is., the Ryukyus, 15-V-1975, Y. NOTSU leg.

Discussion. Since OSHANIN (1906, as division Aphanaria) the genus *Paradieuches* has been placed in the tribe Rhyparochromini. However, the location of the spiracles and trichobothria on the abdominal segments, as mentioned above, evidently proves that this genus belongs not to the tribe Rhyparochromini but to the Drymini as in the case of the genus *Hidakacoris*.

Observing male genitalia, I never found any fundamental difference in the aedeagal structure between two *Paradieuches* species, *P. lewisi* and *P. dissimilis*, and other drymine species, *Drymus* (*Sylvadrymus*) *marginatus*, *Eremocoris angusticollis* and *E. hirashimai*, all from Japan. ASHLOCK (1957) stated that *Drymus* and its relatives including *Scolopostethus*, *Gastrodes* and *Thylochromus* show a remarkably constant pattern in various regions of the phallus. *Paradieuches* and *Eremocoris* can also be considered to belong to this *Drymus* group. The most particular genital structure in the group may be a long pointed lobe of the vesica which is located on the ventral surface of the vesica and protrudent laterally when the aedeagus is inflated.

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I am grateful to Prof. Shosaburo HAMASAKI of Yamaguchi University and Mr. Kazuo MIYOSHI of Hikari-shi for giving me useful information on my field survey, to Dr. Katsura MORIMOTO of Kyushu University who kindly lent me the type specimen of HIDAKA's species, and especially to Dr. Shun-Ichi UÉNO of the National Science Museum, Tokyo, for critically reading the manuscript of this paper.

要約

ツツイナガカメムシは，本州および四国産の材料に基づき，*Dieuches tsutsuii*の学名のもとに記載された種であるが，その所属についてはEYLES (1973)以来疑問視されてきた．このナガカメムシは稀種で研究材料の入手は容易ではなかったが，幸い1997年の「中国地方西部および九州地方北部を中心とする地域の自然史科学的総合研究」により，山口県で十分な数の標本を得ることができた．

精査の結果，この種の雄交尾器の構造は非常に特異で，既知のどの属にも該当しないことが判った．そこで新属*Hidakacoris*を創設し，本種をこれに所属させた．この種はまた，腹部腹板上にある気門や感覚毛の位置関係により，これまで所属していたシロヘリナガカメムシ族Rhyparochrominiからクロナガカメムシ族Dryminiに移されるべきであることも明らかとなった．

ツツイナガカメムシは外見的にキモンナガカメムシ属*Paradieuches*の種によく似ている．これらを比較研究している過程で，後者の分類学的位置にも問題のあることが判明した．すなわち，この属の種はツツイナガカメムシ同様，腹部腹板上の気門や感覚毛の位置が明らかにクロナガカメムシ族の特徴を示していた．そのため本属もこれまでのシロヘリナガカメムシ族からクロナガカメムシ族に所属が変更された．

雄交尾器の形態から，キモンナガカメムシ属の種は*Drymus*，*Eremocoris*，*Gastrodes*，*Scolopostethus*および*Thylochromus*の各属とともにクロナガカメムシ族の中で一つの属群 (*Drymus* group) を形成すると考えられるが，ツツイナガカメムシはそれらとの外見的類似にも拘わらず，まったく別の系統のものである．ツツイナガカメムシの雄交尾器の特異な形態的特徴は，日本およびその周辺の地域から知られる他のクロナガカメムシ族の種には見いだせず，その類縁関係は未詳である．

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